Making and Mending your Nets: Managing relevance, participation and uncertainty in academic/practitioner knowledge networks

Catrina Alferoff and David Knights
School of Economic and Management Studies
Keele University, ST5 5BG.
Correspondence email: d.knights@mngt.keele.ac.uk

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Biographies

Catrina Alferoff has worked on a number of ESRC and EU funded projects and also carried out independent research into Consumption and Lifestyle. Most recently working on the ESRC project, 'The Dynamics of Knowledge Production in the Business School: A Comparative Approach', focusing here on the topic of business school/industry collaborative networks and forums. Recent publications include: Alferoff, C and Knights, D 'Quality Time and the Beautiful Call', in, Holtgrewe, U, Kerst, C, & Shire, K. (editors*): Re-organising Service Work: Call Centres in Germany and Britain*, Aldershot, Ashgate, 2002. Alferoff, C., D. Knights, A. Leyshon and P. Signoretta, 'The 'Let them eat cake' strategy for 'industrial branch' insurance clients: Reflecting on the Demise of a Sector in Financial Services'. *Social Policy and Society*, Cambridge University Press, 3(4) October 2004, pp. 353-363.

Dr. David Knights is Research Professor at the School of Economics and Management Studies in Keele University. With colleagues in Nottingham University Business School, he runs the Financial Services Research Forum – an academic/practitioner network that funds research and has members from many of the major financial institutions, charities, government departments, and regulators. He also jointly edits the Journal *Gender, Work and Organization.* His latest book is *Introducing Organization Behaviour and Management*, Thompson Learning, 2007 with H. Willmott. His most recent refereed journal article is 'Authority at Work: Reflections and Recollections', *Organization Studies*, 27/5, 2006, pp. 723-744. *Mailing Address:* School of Economics and Management Studies, Darwin Building, Keele University, Staffordshire, ST5 5BG, UK. *E-Mail:* d.knights@mngt.keele.ac.uk

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Abstract

Making and Mending your Nets is concerned to examine, from an actor network theory perspective, how the relevance debate concerning research and teaching is a significant non-human actor in the development and management of industry-academic networks associated with UK business schools. By significant, we do not imply the most important because it is only one of many human and non-human actors that may arouse interest, be problematised, enrolled, and/or mobilised for such networks to become 'obligatory passage points' and ultimately irreversible collective assemblies. The article then utilises actor network theory as a framework for examining our primary empirical research on academic/practitioner knowledge networks – nets that require a continuous making and mending in managing relevance, participation and uncertainty. It argues that the actor network framework is more compatible than alternative knowledge diffusion or transfer models with the data we have collected on academic/practitioner knowledge networks UK. In accounting for the dynamic instability and precariousness of knowledge networks, it avoids raising false expectations about business knowledge and its relevance or effectiveness. If knowledge in the physical sciences and engineering unfolds slowly and unevenly in the face of many disputes, disruptions and setbacks, as actor network theory (Latour, 1987) has claimed, then how much more likely is this to be the case in the social sciences? Consequently there should be no expectations of one-to-one, direct causal chains between knowledge production and application, as some business school critics seemingly demand.

Key Words: Business Schools, the relevance debate, industry-academic collaborations, knowledge networks, knowledge diffusion, actor network theory.

Introduction

In an effort to promote industry-academic collaboration, the UK Treasury commissioned Lambert Review argues that the biggest single challenge lies in boosting the demand from business, rather than in increasing the supply of products and services from universities (H M Treasury, 2003:10). The report advocates the development of forums that bring academics and business people together in order to increase the chance that people with common interests and goals will find new ways to develop fruitful partnerships in terms of innovations (ibid. 31).

It is timely, therefore, to provide an investigation of their derivation, development and, where appropriate, demise. There are, of course, reports on single business school-based academic/practitioner collaborative networks (see MacLean and Mackintosh, 2002; Adler and Norrgren, 2004; Benington and Hartley, 2004; Garcia, 2004), but no research has been carried out into the variety of such networks and the processes of their collaboration, conflict and contestation. The objective of our research was to examine business school academic/ practitioner networks through the lens of actor network theory. We have restricted our analysis to those academic/practitioner networks that are based in the business school since this was the research remit within our ESRC project on 'The Dynamics of Knowledge Production in the Business School'.

The business school has long come under attack for lacking relevance to a business community (Bailey and Ford, 1996; Tranfield and Starkey, 1998) that is ever hungry for whatever promises to provide a competitive edge in an increasingly knowledge and information rich, networked society (Castells 2000). Implicit in most of the

accounts is a notion that knowledge should have useful effects on practice and if it does not then that is good reason to question its relevance. Consequently many of the critics have been prescriptive, arguing for a move towards more practitioner-oriented modes of research (Bok, 1990; Tranfield and Starkey, 1998; Starkey and Madden, 2001) or one of fulfilling a knowledge-brokering role (Starkey and Tempest, 2005) of disseminating and perhaps translating diverse knowledges to render them more accessible to business practitioners.

Some of those seeking to resolve what is perceived as the widening relevance gap between academic output and managers' 'interests' focus on process while others concentrate on output. In the former case, a remedy is a co-ordinating mechanism that connects individuals from both parties when framing the problem (Das 2003). Such a 'bridging scholarship' brings together academics and practitioners in framing the research project and in the process, 'synthesis[es] the particular and the general by utilizing experience and theory, the implicit and the explicit, induction and deduction' (Aran and Salipante 2003, 189). Those focusing on output argue that the design of research projects requires an ontological shift on behalf of academics whose approach to research should be prescriptive, or solution-oriented, and informed by an appreciation of managers' 'real world' problems (van Aken, 2005).

An even larger and more inclusive group of critics, and these extend beyond the confines of business school research, support a breakdown of the theory-practice dichotomy associated with traditional 'pure' conceptions of science, the restrictive academic disciplinary boundaries, and the separation of knowledge production from its application (Gibbons et al., 1994; Pearce II, 1999; Nowotny et al., 2001; Adler,

Shani (Rami) and Styhre, 2004). Some of those supporting this closer link between academia and business subscribe to the view that a much wider array of stakeholders than just the shareholder should be taken into account when making management decisions (Hodgkinson, Herriot and Anderson, 2001; Huff and Huff, 2001; Starkey and Madan, 2001).

Yet another growing group of critics are those who identify themselves with Critical Management Studies (CMS) and following a much earlier critique that depicted academics as the 'servants of power' (Baratz, 1960) are fairly scathing of the dominant 'managerialist' emphasis in business school research (Alvesson and Willmott, 1996; Clegg and Ross-Smith, 2003; Grey, 2001; 2004). That is to say, they object to academics being subservient to the economic political and social interests of organizations and their managers rather than taking an independent critical line of evaluating the conditions and consequences of their actions.

Summing this up, it may be suggested that there is a continuum between those, at one extreme, who think business school research is too far removed from managers and their practical business or administrative concerns and, at the other, those who think it is much too close (see also Currie, 2005). The first group take a normative position that supports existing hierarchical structures and identifies with management's concern to improve performance, productivity, and/or profit. Those that demand a less managerial approach to business school research may be divided between the liberals that seek to constrain the pursuit of shareholder value by encouraging a concern for other stakeholders and the critics that reject any attempts to 'cosy up' to management

on the basis that it would compromise their concern to transform the prevailing hierarchy of power and privilege.

In this paper, we are less concerned to favour one or other of these positions so much as to examine the genesis, development or demise of some empirical cases of industry-academic collaborations through the lens of actor-network theory (ANT). From this perspective, ideas about the relevance of management research are seen as one of a range of significant agents (both human and non-human) that serve to facilitate or deter the development of industry-academic networks through the four moments of translation identified by ANT (see below). In opening up the 'black box' of translation, we seek to show how there is no smooth unilinear, uncontested, or simple technical process from knowledge construction to application. Knowledge development and its significance is a much more complex affair involving networks of human and non-human actants in local contexts of contest and controversy and within shifting alliances and resistances. So much so, that it might be appropriate to revise our very conception of knowledge and application to recognize their boundaries as much more fuzzy and blurred.

The paper is structured as follows: in the following section we continue to develop this analysis from an actor network theory perspective. Here we argue that critique of management knowledge as lacking relevance may be seen simply as one of a series of non-human (and human) agents that constitute the conditions that make industry-academic networks possible. Following this we elaborate the actor network theory and methodology before outlining the specific methods used to collect the data for our research of industry-academic collaborations. The remainder of the paper reports on

our findings of the creation and mobilisation of a variety of academic-industry networks and their sustainability or what we call, to repeat our title, 'making and mending your nets'. Finally a brief discussion and conclusion completes the paper.

Relevance revisited

As has been suggested, the relevance critique has significance as a non-human agent in the formation of industry-academic networks but in subscribing to a diffusion model, it sometimes fails to recognise its own importance. It is thereby perhaps looking in the wrong place for knowledge – the business school. Of course, the business school produces knowledge that is linked to pedagogic and esteem networks that secure material and symbolic resources but we would need to look beyond such networks to establish business relevance, as we seek to do in this paper. Once we do this, we need no longer see knowledge production as the preserve of academics whereby it then has to be transferred to managers or administrators for purposes of practical application. Regardless of whether the critic is claiming that management research is too *distant* from or too *close* to practice, there is an assumption that knowledge is created independently of its use and application. This diffusion model reflects and reproduces what Gibbons et al (1994) and Nowotny et al., (2001) have described as Mode 1 research which is typically seen as theoretical, disciplinary with long horizons and peer assessed within the community.

Mode 2 provides an exception in promoting research that is produced in the context of its application (Gibbons et al., 17) and therefore eschews the separation of theory and practice as if they were independent of one another. This work has been highly influential for the debate on relevance in business schools. Although having evolved

out of and co-existing with Mode 1 research, Mode 2 research is transdisciplinary, problem-based, immediate and judged by its utility in practical situations (ibid.). However, this promotion of a closer relationship between theorists and practitioners is easier said than done. Maclean and Macintosh (2002: 383), for example, found that 'despite their common concerns' … in academic-industry research collaboration on strategic transformation, … 'they remain two distinct audiences'. These authors have also applied the underlying principles of Mode 2 research in a health project in Scotland and found that much needs to be done in terms of securing epistemological and practical legitimacy for this form of action research (Maclean, Macintosh and Grant, 2002:203). Why might this be the case? We suspect that it is because of a failure on the part of both academics and practitioners to fully abandon the diffusion model, revealed in the statement that they 'remain two distinct audiences'. This is a reflection of how the model is taken-for-granted (classically represented by the much used commonsense phrase 'that is just academic' to denigrate theory as if this were itself not a form of perhaps 'bad' theory) well beyond the confines of academia despite evidence of its inappropriateness (Latour, 1987).

We believe that Mode 2 research helps us to reflect on such contradictions and to recognise more holistic relations than just the academic-industry one since it is sensitive not only to the diverse range of those engaged in its production but also to those who are directly or indirectly affected by its outputs. There is a concern then not just for commercial, but also 'social markets' where the advantages of knowledge cannot be reduced to economic criteria alone (Gibbons et al., 1994: 12).

However, insofar as it is committed to integrating academic and practitioner knowledge in co-productive ways, Mode 2 research still retains certain aspects of a diffusion model of knowledge for such integration is only necessary if they are separate in the first place. Also the only actors in Mode 2 research are *humans* and they are the sole producers of knowledge that can only be applied once it is *diffused* or transferred to those responsible for practice. By contrast ANT denies the division and separations from the outset, recognising only the different ways in which knowledge alongside numerous other human and non-human entities are enrolled and mobilised to form collective assemblies that vary dramatically in their potential to become 'obligatory passage points', where it would be essential for anyone with an interest in the issues to enter the network. In short, ANT refuses to give credence to the boundaries between knowledge and application that, by default Mode 2 reproduces by arguing for their reconciliation. This takes us to a more detailed discussion of our methodology and methods.

Methodology and Methods

Actor-network theory (ANT) is particularly accommodating in terms of engaging with the dynamic and contentious aspects of knowledge networks. This is because it encourages us to trace the opportunities and barriers associated with the tensions and conflicts of these precarious collaborations. We acknowledge that the social networks studied here are quite different from the scientific and technological networks primarily studied by ANT (Latour and Woolgar, 1979; Callon, 1986; 1991; Callon et al., 1986; Bijker et al., 1987; Latour, 1987). We say primarily in the sense that a central concern of actor network theorists is to show how purist attempts to maintain a separation between nature and culture and indeed our own (so-called) modern culture

and what is seen as traditional is no longer possible (Latour, 1993). This is because hybrid systems that mix politics, science, technology, and nature are proliferating at a very high rate. From global warming to genetic engineering, the boundaries between the technically and scientifically possible and the culturally and socially acceptable are extremely blurred.

Nonetheless, what ANT has traditionally studied are plainly visible artefacts, machines or inventions that have well defined uses. By contrast, we are at a clear disadvantage since not only is our subject matter diverse, transient and often intangible but the research output from business schools is invariably even more so. Despite this, we believe that the ANT methodology can be applied here (see also Levin and Knustad, 2003) for similar actor-network translations are seen to occur whereby the 'ability to translate (re-interpret, re-present, or re-appropriate) other's interests' (Vurdubakis, 2006: 65) to those of the network is realised in particular enrolments and mobilisations that, for many participants, become an 'obligatory passage point'. The use of the term network in ANT must be distinguished from the more conventional usage of involving complex relations *only* between human agents, and where the frequency, distribution, intensity, and proximity of individual actors in social relations is the topic of analysis. A distinctive feature of ANT is its extension of attributions of action 'to non-human … [and] … non-individual entities' (Latour, 1997:1) - an example of which is the very debate on relevance that we have been discussing so far.

Of course, a debate could not exist without human input but the product of this input takes the non-human and certainly non-individual form of written, tape or video

recordings of events or conferences, papers and publications, media reports, and other discourses collected in a kind of collective conscience. Other such non-human entities include the competitive relations between universities, private corporations, and other institutions that participate in academic-industry collaborations, texts, money, public policy, regulations, topicality, strategy, technology and obviously a heterogeneous range of human actors. None of these actors could be seen to cause networks but they are part of a series of controversies and debates, the settlement of which can have the effect of rendering a network at least an obligatory passage point, if not irreversible such that its durability and permanence is virtually guaranteed. ANT seeks to avoid, therefore, privileging the social or society, the natural or nature, or their textual representations for it sees them as integrally embedded in heterogeneous relations of networking.

Strangers to actor-network theory often are puzzled by the idea that artefacts can be agents and yet branded products, football clubs, houses, institutions and corporations, for example, readily enrol and mobilise us to behave in specific ways just as human agents may pursue their interests through identifying with such artefacts. In this sense, these non-human artefacts and human agents are in heterogeneous relations with one another. Because of the actions of government in restraining resources allocated to higher education, many universities feel compelled to seek funds from alternative sources. Some of this search for money leads to academic-industry collaboration but there are other non-human (f)actors that may stimulate network development. In business school networks, for example, an effective non-human actor, or in ANT-speak actant, as we have suggested, is the very view that knowledge should be practical and relevant to business and/or other stakeholders or a notion that

networking with powerful and branded corporations attracts prestige and perhaps income. As research sponsors, sources of access, platforms for debate, co-producers of knowledge or simply vehicles for dissemination of knowledge, corporations can be important allies for universities especially in building networks.

Actor-network theory (ANT) has evolved largely as a method within the sociology of scientific knowledge designed to understand how the conditions for the development of knowledge are not simply intellectual, technical, or scientific but also crucially *social*. This boundary–less methodology corresponds well with the economic conditions of the contemporary business world where 'responsiveness is sought by maximising the flexibility of the organisation's internal and external relationships' (Lee & Hassard 1999: 394).

ANT provides an alternative model to the more common diffusion theory of knowledge development where 'progress' is deemed to follow from the 'discovery' of established facts and technical artefacts. By contrast, the model developed by ANT suggests that facts and machines are social accomplishments – humans and their non-human allies actively produce them through networks of translation where controversies are temporarily settled (Latour, 1987: 132-3). Networks of human (people) and non-human actors (institutions, natural forces, technical devices, money, etc) develop through the following four moments of translation as described by Callon (1986; 1991) and Latour (1987):

Problematization: a moment when certain problems of a technical or social nature are defined and examined in terms of what is proposed and promoted as a means of resolving them;

Interessement: the moment of persuasion where the interests of significant others can be best served by adopting the solutions offered by a new actor-network;

Enrolment: involves a process of recruitment of both human and non-human actors to the network and their lock-in through taking on specific roles and responsibilities for the development of the solutions with which they have become identified

Mobilisation: represents a moment of institutionalisation where actors and resources are mobilised to ensure that the network achieves its objectives and sustains the commitment and energy of those it has enrolled.

At any one of these moments, the network can become an 'obligatory passage point' where anyone seeking to solve the problem which it addresses has at least to enter the network even if only later to leave it in pursuit of an alternative. As enrolment and mobilisation of people and resources proceeds, the network will reach a state of 'irreversibility', where an amnesia sets in such that the sense of any controversy or of alternative solutions to a problem have been long forgotten. Here the network has become highly durable and departures from it few and far between but often irreversibility is created by, for example, *eradicating* all alternative solutions to the same problem or creating scripts that lock people in to a given paradigm.

Research Sites

There are no comprehensive data for university/industry collaborations, since such associations take many forms and emanate from a variety of academic departments,

R&D units, knowledge transfer or technology transfer offices and other similar functions. Under the DTI's remit to bring about closer relationships between higher education institutions and industry, The Higher Education Funding Council for England (HEFCE) provided funding of £78 million to 89 applicants under the first stream of the Higher Education Innovation Fund (HEIF) 2000-2003 and a funded further 87 applicants under the Higher Education Reach Out to Business and the Community Fund (HEROBC) (http://www.hefce.ac.uk). Two of the business school/industry networks included in this research had received set-up funding from HEFCE, while the other networks were supported through donations, subscriptions or with costs borne by the host business school. A web search of UK business school pages came up with 17 business schools that presently host academic practitioner research networks or best practice clubs Of these seventeen: one network proved impossible to contact, three were inactive at the time of the fieldwork, the co-ordinator of one network refused to participate and time difficulties and geographical distance precluded research into a network based in the North of Scotland, leaving us with 11 out of a possible 14 active networks to research. These different forms cover: research networks, best practice clubs and networks dedicated to policy, international or local regional development:

Three are open non-subscription moderated networks

Innovnet[i] is an open network dedicated to regional development in innovation for the small to medium sized organizations;

Perfnet hosts a biennial conference but is otherwise a virtual network in the area of the management of performance measurement;

Socnet is the third open network has an international scope and aims to act as a hub for those parties interested in the area of social entrepreneurship.

The remaining networks are closed in the sense that members are invited to join and largely through subscription. Four of these subscription networks are *research-oriented*:

Knet(1) is in the area of innovations in knowledge management;

Finnet[ii] is focused on the financial services sector concerned largely with understanding consumer financial behaviour and the behaviour of organisations involved in the provision of retail financial services.

Measnet is concerned with performance measurement and management within any sector;

Policynet confines itself to the field of government – local or national;

A fifth *Hrnet(1)* covers the changing nature of work organisation but with a focus on human resources.

Finally, there are three closed networks that are presently oriented to 'best practice' in their field of interest:

Bankclub, is a small group of banking professionals and academics in the area of risk management;

Hrnet(2) covers all areas of human resource management;

Knet(2) is another knowledge management network.

Forums and networks covered in this study vary both in the depth of the activities they undertake, the scope of their coverage, and the benefits that they offer to practitioner members. The characteristics of the networks are presented in Table One:

	KN1	KN2	MN	PN	HR1	HR2	BC	IN	PCN	SN	FN
Generation of Knowledge 1. Co-production of knowledge 2. Collaborative ac. led action research 3. Knowledge sharing	2 3	2 3	2 3	3	3	3	3	3	1	3	3
Activities 1. Seminars/ workshops 2. Conference 3. Special interest groups 4. External speakers 5. Virtual network 6. Site visits 7. Research projects	1 2 3 4 6 7	1 2 4 6 7	1 2 3 4 6 7	5 7	1 4 7	1 3 4	1 4	1 4	1 2 3 4 7	2 5	1 4 7
Benefits to Members 1. Involvement in co-prod of knowledge 2. Access to tools, techniques and training 3. Discounted conference 4. Online network 5. Sociability 6. Access to ac research /publications	2 3 5 6	2 3 5 6	2 3 5 6	3 4 6	2 4 5 6	2 4 5 6	1 2 6	2 4 5 6	1 2 3 4 5 6	2 3 4 6	2 4 5 6
Centrality to Business School 1. Embedded in school / research centre 2. Staff involvement 3. Access for research 4. Consultancy 5. New knowledge for teaching purposes 6. Confers credibility 7. Managed by Academic 8. Managed by Hybrid	1 2 3 4 8	2 4 5 6 8	1 2 3 4 5 7	1 2 5 7	1 2 5 8	1 2 3 5 7	1 2 7	2 3 4 6 8	1 2 3 5 8	1 2 5 7	2 3 5 8
Outputs 1. Academic papers/ publications 2. Joint papers/ reports 3. Case studies 4. Academic reports 5. Website 6. Tools 7. Social networking 8. Newsletter	1 4 5 6 7 8	1 2 4 5 6 7	1 2 3 4 5 6 7 8	1 5	2 4	1 4 8	5 6 7	5 6 7 8	1 2 4 5 7	4 5	1 4 5 6 7
Subscriptions 1. Free 2. Conference fee 3. £0-1000 4. £2000-5000 5. £6000-10000 6. £10000-15000	6	6	4 5 6	1	3 4	6	1	1	4 5	1	4 5
Size 1. 10-20 member orgs. 2. 20-40 3. 50-100 4. 200-400 5. Over 500	1	1	2	4	3	3	1	4	1	5	2

Table One: Characteristics of Case Study Academic/Practitioner Networks

Quarterly meetings were general, seminars and workshops an additional benefit for the research oriented networks along with either academic research, action research or a more sophisticated form of collaborative research.

In scope, the networks are multifaceted both in terms of the participating academics, who have a variety of disciplinary backgrounds and practitioners drawn from different functional areas in public and private sector organisations. The best practice clubs are focused on a particular profession or occupational group - personnel directors and risk managers, for example. The most intensively knowledge-oriented forums and networks tend to be comparatively small in size, typically between 16-33 practitioner or associate members and up to eight business school staff: academics researchers and administrative staff. Industrial clubs are somewhat larger at around 50 practitioner members and two to three academic co-ordinators or facilitators. In terms of longevity, six of the networks have been active for ten years, or more. Four networks are fairly recent creations and two networks that were included in the early stage of the research ceased their activities shortly after contacting them.

Having explored through interviews and documentary analysis the genesis of the eleven networks, Finnet, Innovnet, Knet(1) and Measnet .were able to offer the variety of activities and levels of participant, or non-participant observation required for conducting in-depth case study research. This involved interviewing not only the founder and/ or co-ordinator of the network, but also practitioner members (Innovnet five, including a representative from the local RDA, Hrnet(2) five, Knet(1) six and twenty three from Finnet). These network members tended to occupy middle-management roles in their organisations. We also attended network events, special interest groups, a master-class and training session as well as being granted online access to all resources, newsletters, presentations, summaries of workshop events, agendas and more limited access to minutes of meetings from Bankclub and Hrnet(1). In addition, full participant observation was undertaken in Finnet (Knights, 2007;

Knights et al., 2007) and a less intensive form of participant observation in Measnet and Perfnet - a virtual network dedicated to performance management. Innovnet differs from the first three subscription networks in that it is dedicated to regional development of the small business sector that now comprises 60 per cent of employment in the UK. The findings were grouped thematically addressing the four moments of problematisation, interessment, enrolment and mobilisation. This is not to imply that this is an orderly progression through four functional stages, since our research into these networks disclosed the precariousness of these networks such that their management requires a constant process of regeneration to satisfy the changing demands of the membership.

Making and Mobilising the network

Problematisation

Academics generally initiate these collaborative groups and networks to address a number of existing or new problems, but the first stage involves co-opting academics and administrative staff, member companies and individuals and, other associates from the public and private sectors. They are driven to do this due to a range of pre- or other network conditions such as the non-human demands for relevance, fear of 'ivory tower' charges, supplementary income, consultancy activities, scarce university resources, funding for postgraduates, research access and human experiences of previous work in industry, a desire for status and recognition, and career development. Prior activities will, therefore, have involved various human and non-human actors in interesting and enrolling the business school hierarchy and colleagues or postgraduates into the notion of a network, generating seed-corn funding, technological and administrative resource, linking to Government policy, and

mobilising existing research partners, etc. What this demonstrates is that the existence of the network can never be taken for granted; there is no linear progression from interesting potential members, to an ultimate stage of irreversibility. We found the reasons for initiating a network are diverse and not mutually exclusive. Thus there was much overlap within the following not necessarily exhaustive list of reasons for network formation:

- Creating an academic-practitioner network to sustain and secure financially an existing research centre - Finnet;
- Exploring, developing or formalising existing relationships, whether these have been a set of consultancy contacts, locations of previous research, informal contacts, or a more institutionalised arrangement relating to funded research - Finnet, Knet(1), Bankclub, Hrnet(2), Measnet and Perfnet;
- For entrepreneurial reasons, - Innovnet, Knet(1) and Knet(2);
- To develop strategic business, or knowledge management tools - (Knet(1), Knet(2) and Measnet;
- To improve organisational development and working practices - Hrnet (1)
- To gain credibility and reputation - Finnet, Knet(2);
- To exploit an available grant, or funding opportunities for regional, national or international, social and economic development, - Knet(1), Innovnet and Socnet. Mobilising networks often involved money as an important non-human actant (Callon 1986)
- In response to Government or regulatory policy, - Finnet, Innovnet and Knet(1)

Networks that are explicitly research focused provide support and research access for academics and postgraduate students. An agreed number of days, or weeks of

research may originate from and be incorporated into a higher level of subscription as in the case of Knet(1). In other cases, networks may seek to use member subscriptions to 'kick start' or complement funding from the research councils for longer-term projects (e.g. Measnet and Finnet). A further attraction for academic respondents is the benefit of this in-depth contact with firms. Workshops, meeting and conferences are important channels for keeping in touch with the latest management thinking from a practitioner perspective. As a result, academics involved in research networks claim to be ahead when it comes to thought leadership in their field and are also able to gain enhanced credibility with MBA students by bringing a wealth of examples from practice into their teaching.

Money serves as a significant intermediary that keeps these networks in motion and maintains the production of knowledge, and the texts (research reports, workshop materials, articles and so on) through which it is distributed. It is also essential to the communication systems that are necessary to renew enrolments and mobilise other human and non-human actors and the embodied skills and knowledge required to administer the day-to-day activities of the network (Callon 1987). The level of administrative support provided by the business school to the network varied. Naturally, networks hosted by prestigious business schools, or those embedded in a research centre within the business school were at an advantage when it came to IT and administrative support. Usually they benefit from a dedicated member of the IT and administrative staff on a part time basis although three networks - Finnet, Innovnet and Knet2 - varied from this model. Finnet employs their Chief Executive as a consultant to provide administrative as well as management support for the network and leaves only financial accounting matters with the university. Innovnet

relies on the practitioner associate for all administration and Knet2 as a more free-floating entity, has its services and facilities resourced by the network rather than the Business School. Subscriptions to the networks varied from a lowest limit of zero for Innovnet, where the funding and resources are supplied in the main by the local regional development agency, Bankclub, a donation of £400, attendance fees for Socnet which benefited from a large endowment through a charitable foundation, tiered membership for individuals and associate members running at £150 - £2500 to highs of £12,000 - £15,000 for the highest level of membership in Knets1, Knets2, and Measnet, which not only includes a specified number of research days but also entrance to the annual conference. While money is a crucial intermediary in the survival of a network, it serves primarily to transport meaning rather than transform it whereas many other human and non-human actors are described as mediators (e.g. the relevance debate, brand images, meetings, research, government buildings) since they do transform meaning within and beyond the network (Latour, 2005: 105).

For practitioner members, joining an academic/ practitioner network may offer solutions to a number of problems that cannot be easily resolved within their organisation. Firstly, opportunities for personal development for practitioner members; participating in a knowledge network is seen as a learning opportunity for members who do not have facilities to acquire this kind of training and learning in their own organisations. This applies equally to the Innovnet member who is junior manager in a small landscape gardening company where he is unable to acquire management skills necessary to progress in his organisation, the Socnet member preparing to set up a local social enterprise, or the Policynet member who is an elected politician and is seeking to develop leadership skills. Secondly, strategic

advantage was seen to be an output of participating in workshops, seminars and master classes. Thirdly, there is sociability or networking for its own sake. Aside from the presentations by academics and thought leaders, practitioner members from three of the networks, Hrnet(1), Knet(1), Finnet and Measnet told us that the social aspect of meeting with other members who are going through similar experiences was the most valued aspect of their membership. A manager from a large utility company values Measnet for:

> The assurance from other companies that are on the group that their approaches are as chaotic as ours, if you like. We're all sort of struggling to get the right things in place but no one can do it perfectly. You know? So it makes you sort of … you get the ideas, you realise you're on generally the right track, the rest of industry is broadly at the same stage of evolution and muddling along together. So it's those sort of areas really, yeah (12.08.05)

Interessement

Although, undoubtedly, different practitioner members vary in their propensity to take on board the academic approach that tends to predominate at seminars and meetings, this is not so easily accomplished. Capturing the interest of practitioner audiences may, at worst, involve 'overcoming entrenched anti-intellectualism' (Founder Knet2) and, at best, involve substantial revision by practitioner members before information acquired either through seminar presentations, or academic papers and publications can be utilised (Founder Finnet). A training manual on virtual teams produced for internal use by a communications firm was characteristic of this process of the re-presentation of material derived from academic action research. The manual differs from the original report in being formatted in the company style and in presentation of the subject matter; the material is presented in a bulleted point, shortened version, illustrated by stories derived from the company history. Of course, the revision may be as important as the material originally presented and this would only be seen as out

of the ordinary from the point of view of a diffusion model where knowledge is understood to be complete prior to its application.

Levin and Knustad argue that networkers may bring a range of interests to the table: short-term or long-term economic goals, the potential for future contacts, or learning opportunities (1992, 8). We did not find much evidence of the search for short-term solutions to an immediate problem; however network members may find some topics more appropriate to their perceived needs than others. The associate co-ordinator of Innovnet, has attempted to align the interests of academics with practitioners in setting up a programme, but this does not always capture the interests of practitioners attending the network events:

> The things that we think they've needed to know have not necessarily been great crowd pullers. So, we've done things on, about two years ago we done benchmarking. We've looked at change management, for example. We looked at the balanced scorecard. I think it would be fair to say that in all those cases we got about half the turnout as we would have. You know, we've probably only got about 80 people for those, whereas, if we'd put on responding to what they want to know about, such as entrepreneurship, we get a better turnout. So, it's the human factor in a way, isn't it? Why would anyone running a small business, employing ten people and somewhere in x, really want to engage in process management, or balanced scorecard? (23.01.04)

To mediate the interests of the various members of the network, predominantly owners or managers of SMES, the associate co-ordinator now focuses the events and online newsletter primarily at the SME, including only a small element of items that are of more general interest, and that rely on a smaller though still viable number of attendees at events. Later on in this paper we discuss the practice common to many of the networks of engaging member interests by inviting them to present papers on strategies that they have deployed in their organisations and which are of common interest to the group.

Other practitioner members valued their network for the space it gave to take a balanced, long-view on organisational change and development in making sense of a complex and weakening environment (Weick 2001, Grey 2001). We found that, on the whole, members were aware of the difference between the short-term consultancy panacea and the big picture, tried, tested and developed over time so, although practitioners may express a desire for solutions that can be adopted within their organisations without too much customisation, they are not demanding management consultancy. In fact, one of the Knet(1) respondents who is knowledge manager for a multi-national food firm explicitly states:

> Part of it (*her job)* that does need to have the feed of what's going on in the academic world but also what's going on with other industries and to be able to make contact with other industries by an already formed network was very attractive to us. We felt that when it was introduced, we liked the fact that it was a non-competitive nature, we liked the fact that we didn't have consultants hovering all round us. As well, we did like the slightly more academic lien to this network, which balanced … I tend to sit on some other networks. So, we liked that kind of balance it was going to give us and therefore it was an appropriate addition to our time really (20.04.05).

Enrolment

Nevertheless, we did find that attrition problems bedevil a majority of the more established networks. On average, subscription-based networks lose between 10-15 per cent of practitioner members each year. Because irreversibility was far from being achieved, enrolling or retaining members makes continuous demands on the resources of most of the networks that we researched. For the executive director of Finnet, losing members is a constant problem due in no small part to a lack of vitality in both senses:

> We do continually lose people. In part it's because we're not one of those wobbling plates, we're a nice to have but we're not vital. And because we've still got too much of our advocacy at too low a level, when push comes to shove and the budget when the axe goes round, we're a very you know, easy … you know, painless way of losing £7,500. So we are vulnerable but we have lessened our churn this last couple of years (Executive Director, Finnet 11.01.05).

As we have argued, networks exist in a state of severe uncertainty and attempts at enrolment and mobilisation of the network can be particularly precarious due to the difficulties in holding the interests of both academic and practitioner participants. Contact may have been established around a particular project, which gives partner companies a strategic edge. Yet once this project is complete the momentum for extending the relationship into the long-term around knowledge sharing and a research agenda may be slowly dissipating. It may require continual regeneration of interest (interessement) to keep members enrolled since they will be continuously reviewing the value-added of the network, especially where there is a financial cost in an annual subscription, this practitioner member of Knet(1) weighs up the value of the network in terms of its strategic advantage to his company:

> What I was expecting to get out of (Knet1), new ideas first and foremost, about knowledge management and the implications of implementing some of the ideas that would be discussed. Also I would have hoped to … meet very forward-thinking people in the field of knowledge management, being able to collaborate with them, not only within the scope of the forum, but also outside the scope of the forum. Now if we explore those two and mention this a little bit more; I think in terms of new ideas, I feel firstly slightly disappointed. I was hoping for … if you're looking for a virtual team, a special interest group, I was just hoping to get more out of it, in terms of better understanding of the implications of working in a virtual context. Some other people that go to (Knet1) share that view. So there's been some debate within (Telecommunications company) about what is really the value of (Knet1), in terms of getting new ideas and learning (10.05.05).

Beyond the benefits for the companies involved, networks must always hold the interest of individuals, and this is most easily accomplished when the identities of

those enrolled appear inscribed on the practices and material artefacts of the network. This academic founder of Measnet explains the continuing process of interessement and mobilisation that is required to keep the network going:

> The question of value for money, this is why in our case every couple of years the model has changed when it's getting a bit repetitive. That's when they start to question the value of the money. So, by constantly improving the model you constantly change what the firm sees it's getting, or the individual sees what they are getting (26.08.05).

In sum, the absence of a defined solution to a shared problem, limited interest, an insufficiently solid enrolment and/or mobilisation of human and non-human actors and resources may have prevented many of these networks from securing a position of irreversibility. To secure such stability, networks have to ensure that all *alternative* ways of arousing interests around particular problems, enrolling significant supporters, and mobilising resources have been driven from the collective memory.

In itself, the renewal of the network through membership churn may not be perceived as a negative property of academic/practitioner networks, since it assures a constant supply of new information and – potentially – the production of new mobilisations , however, for research networks the fluctuations in funding derived from subscriptions may pose problems when planning a programme of research, or arranging the costs of inviting external speakers. Finnet found itself in a precarious situation in 2002-3 when a number of members were beginning to lose interest evidenced by a fall off of attendance at meetings, the loss of a few high profile members, and a limited research programme. A survey of members was conducted and while many were satisfied with the network, some were concerned about relevance typically expressed by one member as 'you're not scratching where I am itching' (Tiratsso, 2005; Waite, 2005).

Relevance had always been an issue driving network relations with solutions such as language accessibility and style in reports, participative workshop meetings, and the co-production of knowledge with varying degrees of success but a radical departure from previous practice was now introduced. New actors or allies from government agencies, the regulator and other subsidiary agencies with an interest in the financial sector were enrolled, new venues in prestigious locations in London were mobilised, and the presentations were diversified beyond the ongoing research to include topical issues, practitioner content, and organised around a coherent theme of some strategic importance for the sector (Knights et al.,, 2007). This was the first sign of a possible irreversibility since members of the network saw additional advantages in networking with government agencies and other organizations, including stringent critics of the industry. As one member of Finnet argued:

> I think…[critics are] useful, whether you agree with them or not. I mean, I remember having the [Forum] dinner recently with [XXX, the guest speaker], where he was…very controversial and scathing about different things, and, you know, whether you agree with it or not, it's good to be challenged (Interview conducted on the 31.03.05 by Tiratsoo, 2005: 9).

Network survival is not likely to rest solely on the development of knowledge and learning; it will also depend on delivering the promise, at least, of strategic and economic benefits to members (Levin and Knutstand, 2003 6-7).

For networks to survive:

> The continued engagement in learning processes is combined with other interests also being fulfilled… it is not enough to search for an understanding of learning networks. One must search for understanding the networks in which learning networks exist and prosper. Networks become a realistic opportunity when learning is integrated into everyday business activity (Garcia 2004: 8).

Getting it right and carrying along both organizers and the members can be a matter of careful balancing of the interests and identities of all parties. As we have intimated,

practitioner members may be seeking strategies or tools that can be put to work in the short-term and these have to be accommodated with those who may have a longer-term perspective but a network needs to resist pressure of becoming a short-term consultancy arrangement a risk anticipated and forestalled by the co-founder of Policynet

> You can say, "OK, I can hear they're banging on about this, but I think the issue behind it is this, so I wonder if I phrase it in this kind of way or conceptualise it in this kind of way"… so that sometimes works. Other times it might be that they bang on about something and you have to say, "Well actually, quite honestly, I think that's just a fashion and it will be gone in a year's time and there will be a different language. I think we need to go for something deeper than this or longer term or more significant"… you can't get drawn into consultancy with one, so you can't get drawn into one organisation's obsession, because it has to be of relevance to all of them, so that helps keep it at the strategic level, I think (Co-founder Policynet 14.04.04).

The notion of growth typifies the strategic view of most organisers of research networks, as one would expect. In contrast to the evolutionary nature of academic research, however, the time involved and the quality of the ideas may make it difficult for practitioners to justify the time and money investments and, therefore, aligning the interests of academics and practitioners around the research agenda is often difficult. In fact, research completed by the network may be valued less than networking with peers and presentations by gurus and thought leaders.

Mobilisation and Network Maintenance

At this moment, the mission of the network co-ordinator is to ensure that the network achieves its objectives and sustains the commitment and energy of those it has enrolled. Measnet was initially a discussion group, the subscription covering facilitation and co-ordination of events at, or near the university; in order to enrol

others – so that they would participate in construction of this specific, ongoing debate on performance measurement, member companies were invited to host meetings, thus involving new company members and technological and other materials. At the third and fourth stages, the content of meetings changed; speakers from firms external to the network gave presentations, prior to academics presenting the latest research in the field. To avert the danger of the group deteriorating into a 'talking shop', after five years, tiered membership was introduced with the highest subscription level offer of twenty days of free research on a topic of mutual interest and this began to be seen as a desirable, if not an obligatory, passage point. A further reshuffling and mobilisation of the group followed when two groups formed as a result of a public/private split with separate second-day meetings for groups of members from each set of organisations that address their differing concerns. The latest innovation for the group is self-help sessions.

Strategies deployed by managers of the other networks in the study included: mobilising existing members by incorporating them into new groupings around specified subject areas (Knet1). In addition, a rearranging of the members of the network and bringing in new allies, (Latour, 1987) from organisations that are exogenous to the network (e.g. representatives from Government departments, consumer organisations, consultancy and training organisations) may help organisers reawaken the interests of members (Finnet). Networks may also deepen the opportunities for knowledge acquisition by adding extra and attractive incentives: site visits, access to policy-makers, leading edge thinkers, presentations by nationally, or internationally known gurus, master-classes with well-known business, or training consultants (Finnet, Knet(1) and Knet(2).

Human and non-human actors may be involved more deeply through members hosting meetings, or sharing their in-house training courses as part of promoting the corporate brand; mobilising non-human actors such as tools, toolkits, websites and newsletters, or digestible summaries of academic research papers also inscribes members within the network (Hrnet(1), Knets (1) and (2), Innovnet). Individual members may be drawn in more closely by participating in research and report writing, special interest groups or self-help clinics in which the leadership is not necessarily in the hands of the network co-ordinator(s). Examples of these strategies were found in Policynet, Measnet and Knet(1). Ultimately, the aim of these various translations is to reach equilibrium where all are moving towards a recognised outcome and peoples' roles 'captated' (Latour, 1987) – a situation where opposition is so overwhelmed and isolated as to leave it 'trapped' into embracing the network..

On the negative side, organisers of the network may find it difficult to interest and involve other members of the business school faculty, as this associate co-ordinator of one of the knowledge networks says:

> I would say and our strap-line in the Knowledge Network is 'Knowledge for the Knowledge Economy,' and it's releasing that knowledge for the knowledge economy. I think we can only get them to engage more if one of the key drivers (which is the RAE[iii]) reflected more involvement and rewarded more involvement in some of the stuff which is probably lower kudos, i.e. until it fully reflects more applied research, more getting involved with SMEs and community, then nothing will ever change (manager Innovnet, 23.01.04)

Academics involved in the running of such networks may, in some cases, suffer from lack of opportunities as this comment from an academic who eventually closed down the network that she has run for ten years demonstrates:

> What we haven't got is any articulation about what the middle people do, the people like me. So what's the career path? How do they evaluate it? Because, of course, some stuff, which is practice-oriented, is rubbish, just as some stuff which is blue skies is, so, what we don't have is any way of discriminating between good practice research and bad practice research and that's a problem as well. So, we just need a clear articulation and a way of measuring what it is and a way of creating career structures for people, which provides then with a feeling of value and meaning. We'd sent about four articles to AMR and they'd all been rejected and I just thought, "Oh, I've got to do something else now". But, it was very successful for what it was and the companies would still now say it was the most the most important learning event that they'd been involved in (15.09.04)

When it comes to publishing, aligning the interests of the business school with the interests of the practitioner–oriented network presents the academic with a dilemma that is not easy to resolve. This is expressed by the academic/coordinator of the industrial performance network (Perfnet) who says of the outputs from their biennial conference:

> We publish a special issue of papers from each conference but the kind of the … the review processes can be interesting because sending out papers to people from a different research paradigm, may well mean that the meaningfulness of the review or the response you get will be kind of quite different. And also, it means that the quality of the journal that you can take as your special issue, can't be of the very highest because you won't necessarily have sufficient amount of really top quality for that particular journal … what that particular journal sees as top quality pieces of research to put into it (27.05.04).

A majority of networks originating from business or management schools have recruited the senior manager/administrator from outside of the faculty. The main reason for this is that such a job would not enhance the career of an academic and indeed would damage it because of the time taken out from research and publishing. Professors' head up two (Measnet and Hrnet1) of those networks that had not, in effect, outsourced the day-to-day running of their activities. Perfnet, Bankclub and Socnet are run by less senior academics. The knowledge network, Knet (1), Hrnet2, Finnet and Policynet are run by individuals from a practitioner background who

occupy an associate or visiting position within the business school and in the cases of Knet1 and Finnet, strategic decision-making for the network is overseen by a steering group composed of an equal number of senior academics and practitioner members. Practitioners manage Knet2 and Innovnet.

Despite the ongoing debate on relevance and closer linkages between universities and business that prevails both within the academic community and in the wider policy arena, some networks are more deeply embedded in the day-to-day activities of the school than others. This is more likely when the network can provide inputs into essential activities of a research centre, or institute in the form of research opportunities for graduate students, consultancy contracts for staff, funding for postgraduate learning and executive short courses and so on. Policynet, Socnet, Hrnet1, Measnet, and Knet1, and more recently, Hrnet2 are examples of networks that by mobilising the business school hierarchy more deeply, embed the business school into the network. In the other cases the business school may not perceive the network as the valuable resource that it could be and thus weaken the two-way link between the network and the school that is its host. Where the link is strong, the participation of other members of the faculty confers a higher level of enhanced legitimacy to the network. For the other networks, where the rewards for participation were less clearly defined, generating interest and involving members of the faculty was uneven and patchy. A small, but dedicated group of faculty members will be found at network meetings and seminars, confirming the observation of the founder of Knet:

> I have eighty-twenty rule, that is eighty per cent of the academics I would say and I think it's relevant for other business schools, don't get involved as much as they can do and I, because of that, don't push them too hard as it's a distraction from their teaching and their research. There's usually twenty per cent who are very good, do get involved in businesses and get involved in everything else as well, probably good teachers, researchers and they're good

> at this. So far it's an eighty-twenty rule, I'm hoping in time it will be more like a seventy – thirty, sixty-forty. (Founder Knet2, 01.04.04)

It was not surprising, therefore, to find that the demise of four other networks occurred as soon as their academic founders had lost interest and moved on to other activities. Networks appear to be at more threat of closing where the academic founder, or manager, loses interest or moves on than as a result of the steady churn of practitioner members. Finnet is interesting in this respect as when moving universities, the founder transported the network with him – mobilising sufficient human and non-human mediators to ensure its reconstruction. Here again it is not heavily embedded in the business school and does attract occasional criticism from there. In its defence are mobilised the relevance card, the support of the VC, its role as an important mediator in Research Assessment Exercises, and its potential to form the basis for other kinds of funding bids both private and public.

Summary and Conclusion

In summary, the networks described here vary in style, scope and mission but what seems to sustain them is the arousal of some, albeit more or less differentiated, shared interest in a problem. Of course, the problem may be constructed through, or be an outcome of, a networking activity that had been generated for other reasons, such as the debate on, and sometimes demand for, relevance, research access, funding objectives, chair sponsorship, honorary degrees for business people, etc. In this sense, the apparent consensus may be superficial since the academics and practitioners often perceive the problem completely differently and this fuels the tensions and potential conflicts that make networks difficult to maintain.

These tensions revolve around different kinds, and/or understandings, of politics and power, space and time, knowledge and information that reflect and reproduce everyday organizational life. However, what practitioners sometimes see as a weakness in academic preoccupations with knowledge for its own sake can also be viewed as strength. This may be seen as the other side of the relevance argument, for here practitioners recognise the enhanced legitimacy of knowledge that is untrammelled by the demands of short-term goals such as profit and is comparatively independent of political or economic interests. On the other hand, business school academics are conscious of the problems of pursuing 'ivory tower' research that seems to have no connection with the management practices that are their subject matter. As we have intimated, knowledge for its own sake, independence and the so-called ivory tower in the same way as the debate about relevance are non-human mediators often mobilised to build or consolidate industry-academic networks. They help to generate awareness of how strong links with business help resolve problems of research access, legitimacy, and inadequate public funding. In addition, networks are able to enrol a wide range of corporations, and other bodies such as government departments, regulators and consumer interest groups - all of which provide access to different points of view that may help to anticipate change and possible innovative responses to it. Here a range of significant human and non-human actors are enrolled, thus mobilising increased resources that begin to transform the participation into an 'obligatory passage point' and possibly the prospect of network irreversibility. As yet we have seen no business school based industry-academic collaborative networks that could be seen to have achieved this kind of irreversibility. For it is no mean feat merely to keep practitioners and academics on board, let alone make them think membership is a forgone conclusion.

In this paper, we have adopted an approach that facilitates tracing and tracking the opportunities and barriers associated with a selection of industry-academic collaborations in the form of knowledge networks. As the paper has sought to demonstrate, such networks are always in a state of considerable uncertainty due to the differing expectations and demands of a plurality of both human and non-human actors that are not independent of the very knowledge that is sought, developed, and used (Knights et al., 2002). The paucity of research in this field perhaps reflects the limited number of industry-academic collaborations but our research has necessarily been confined to business schools and there is much more scope for further research beyond this narrow focus, as our reviewers have indicated.

Currently we see the potentiality of falling into a chasm created by the polarization between short-term business interests and longer-term academic rigour where industry-academic knowledge networks would suffer an imminent demise. However, to some extent standards have become less intense due to a degree of convergence where universities have been subjected to a managerial revolution emulating the 'corporate model of management' and business has become more collegial – working in cross functional project teams independent of the official hierarchy (Gibbons et.al.1994: 82). Nonetheless, the effect of such convergence should not be exaggerated for some academics continue to express distaste for the managerial demands that they feel government has imposed upon them. Equally, the autonomy of project management teams in business is heavily circumscribed by financial budgets, targets and time constraints.

We have argued that actor network theory offers a more plausible framework than diffusion models for examining the dynamic instability and precariousness of knowledge networks. At the same time, it does not raise false expectations about business knowledge and its relevance or effectiveness. If even knowledge in the physical sciences and engineering unfolds slowly and unevenly in the face of many disputes, disruptions and setbacks, as actor network theory (Latour, 1987) has claimed, then how much more likely is this to be the case in business and the social sciences. Government and the funding councils seeking to promote more effective applications of social science research generally fail to grasp these complexities. The policy implications of this paper are then to discourage policy makers from presuming knowledge to be readily diffused through networks or for the latter to be straightforward, unproblematic or tension-free activities. Consequently there should be no expectations of one-to-one direct causal chains between knowledge production and application. For not only does this misrepresent knowledge and the networks within which it is embedded but it also fails to trace through the heterogeneous assemblies and flows of human and non-human agents that are their medium and outcome.

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[i] **Notes**

In all cases pseudonyms have been used to protect the privacy of the institutions and members of the networks.

[ii] While still using a pseudonym here, we don't feel compelled to conceal the identity of Finnet as the Financial Services Research Forum at Nottingham since one of the authors created this activity

in 1993 in Manchester and a good deal of data is drawn from his experience of actively managing, and researching, in the network. We also draw on some interviews that another member of our research team conducted (Tiratsoo, 2005).

[iii] The RAE is the research assessment exercise, which evaluates the quality of research every 4-6 years and grades all university departments, which then determines the distribution of the research component of financial awards.